25. The apparatus according to claim 5, further comprising:

a display;

a network interface; and

a computer for executing network software,

wherein maintenance information of the scanning exposure apparatus can be communicated via a computer network.

26. The apparatus according to claim 5, wherein the network software is connected to an external network of a factory where the scanning exposure apparatus is installed, provides on said display a user interface for accessing a maintenance database provided by a vendor or user of the scanning exposure apparatus, and enables obtaining information from the database via the external network.

REMARKS

Applicant requests favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

Applicant submits that this Amendment After Final Rejection clearly places this application in condition for allowance. This Amendment was not earlier presented because Applicant believed that the prior Amendment placed the application in condition for allowance. Accordingly, entry of the instant Amendment, as an earnest attempt to advance prosecution and reduce the number of issues, is requested under 37 CFR 1.116.

Claims 1-26 remain in the application. All of the independent claims, Nos. 1, 5, 7, and 11, are hereby being amended to more clearly define the claimed invention. With this

revision, Applicant submits, key differences between the present invention and the references relied upon in the final rejection become even more apparent.

As presently claimed, the invention relates to a scanning exposure apparatus for transferring a stage-supported master pattern onto a stage-supported substrate, while synchronously scanning the master and the substrate. The pattern is made up of a plurality of shot regions, arranged in rows. A controller regulates the movement of the substrate stage during scanning exposure so as to assure that the distance over which the substrate stage is moved (e.g., accelerated) before it reaches scanning exposure speed (i.e., the "setting distance") is sufficiently long that any synchronization error that exists between the master stage and the substrate stage will be slight enough to be within an allowable range. Synchronization error can be caused by the initial vibration generated when accelerating the substrate stage up to scan speed. Prior to the present invention, it was known to use a combination of setting distance and scanning speed that maximizes the rate of throughput for such an apparatus. However, Applicant has discovered that synchronization accuracy is poorer for the first shot in each row, than for the other shots in that row. Therefore, a setting distance that is long enough to achieve an acceptably low synchronization error for the first shot in a row is actually longer than is needed for each of the following shots in that row. (See paragraph bridging pages 28-29 of the specification.) The present invention, as set forth in claims 1 and 7, allows one to improve throughput rate by shortening the setting distance for other shot regions in a row after the first shot region.

Applicant also has found that it is preferable to determine row-by-row the best setting distance for the first shot scanned in that row. (See specification, page 27, lines 4-11.) Claims 5 and 11 are directed to this feature of the invention.

All of the claims have been rejected under 35 USC 103(a) as allegedly being obvious over U.S. Patent No. 6,411,365 to Takeishi, in view of various secondary references. The Examiner refers particularly to Takeishi's disclosure at column 6, line 44 to column 7, line 26. What Takeishi discloses there is a stepwise procedure for determining what "settling time" will maximize throughput for any of a variety of different situations. Thus, the shortest operable settling time is determined for each of various scanning speeds and/or other conditions such as, for example, the acceleration rate, the jerk time, the shot position, and the scanning direction. In this way, "the settling time can be obtained stably for not only different process conditions but also different apparatuses. As a result, the settling time for each scanning speed can be determined to be the shortest, and the throughput can be maximized for each scanning speed." (Column 7, lines 30-34.)

There is absolutely no suggestion in Takeishi of using different settling times for different shot regions when using a region-by-region procedure for transferring a master pattern to a wafer. Indeed, Takeishi does not appear to disclose a process in which a master pattern is reproduced in rows of shot regions on a substrate.

The Examiner contends, however, that it would be obvious from Nishi (U.S. Patent No. 5,477,304) to use the Takeishi procedure when transferring a master pattern to a wafer by a scan and stitch operation. Even if the teachings of those two references are combined, however, it does not appear that the result would necessarily be an apparatus or method that meets the limitations of Applicant's claims. Takeishi's method of determining the optimum settling time for a given scanning speed presumably would result in a single settling time to be used throughout the transference of Nishi's reticle pattern.

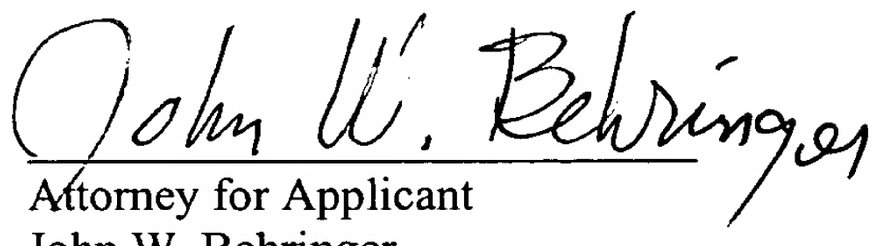
The Examiner insists otherwise, saying that the "structure and function of Takeishi in view of Nishi would inherently lead to the method steps recited in [Claims 7-9 and 11]." In formulating an obviousness rejection based on inherency, it is incumbent upon the Examiner to "provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). As stated in the Manual of Patent Examining Procedure, "The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic." MPEP §2112. Applicant respectfully submits that the Examiner has not adequately explained why the procedure recited in the present claims would necessarily result when applying the Takeishi method to the process and apparatus disclosed in Nishi. Indeed, the position the Examiner appears to be taking is that Applicant's discoveries and improvements *could* have resulted from an attempt to combine the teachings of those two references. That, of course, falls short of a proper ground for an inherency/obviousness rejection.

Neither of the other two references relied upon in the final rejection, Takahashi or Murakami, is relevant to the issue of whether the teachings of Takeishi and Nishi, when considered in combination, render obvious the apparatus and method set forth in Applicant's claims 1-3, 5-9, and 11. Accordingly, since all of the remaining claims depend from claims 1, 5, 7, or 11, they, too, are patentable over the cited references.

Favorable reconsideration, withdrawal of the rejections set forth in the above-noted Office Action, and an early Notice of Allowance are requested.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our address listed below.

Respectfully submitted,



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APPENDIX A

IN THE CLAIMS

1. (Amended) A scanning exposure apparatus for transferring a pattern of a master onto each of a plurality of shot regions defined on a substrate, while synchronously scanning the master and the substrate, wherein the plurality of shot regions are defined such that a plurality of rows each including plural shot regions are arrayed, and said apparatus [comprising] comprises:

a master stage for moving the master;

a substrate stage for moving the substrate; and

a controller for controlling movement of said substrate stage during scanning exposure of the plurality of shot regions so as to assure that a setting distance in which said substrate stage is moved guarantees that a synchronization error between said master stage and said substrate stage falls within an allowable range after said substrate stage is accelerated up to a scan speed for the scanning exposure,

wherein said controller controls the movement of said substrate stage such that a setting distance for a first shot region, which is exposed first, upon a change in [a] the row [to which a shot region to be exposed belongs], is set to be longer than a setting distance for other shot regions.

5. (Amended) A scanning exposure apparatus for transferring a pattern of a master onto each of a plurality of shot regions defined on a substrate, while synchronously scanning the master and the substrate, wherein the plurality of shot regions are defined such that a

plurality of rows each including plural shot regions are arrayed, and said apparatus [comprising] comrpises:

a master stage for moving the master;

a substrate stage for moving the substrate; and

a controller for controlling movement of said substrate stage during scanning exposure of the plurality of shot regions so as to assure that a setting distance in which said substrate stage is moved guarantees that a synchronization error between said master stage and said substrate stage falls within an allowable range after said substrate stage is accelerated up to a scan speed for the scanning exposure,

wherein said controller controls movement of said substrate stage in accordance with a setting distance determined for each of the plurality of rows [row to which a plurality of shot regions belongs].

7. (Amended) A scanning exposure method of transferring a pattern of a master onto each of a plurality of shot regions defined on a substrate, while synchronously scanning the master and the substrate, wherein the plurality of shot regions are defined such that a plurality of rows each including plural shot regions are arrayed, and said method [comprising] comprises:

the control step of controlling movement of a substrate stage during scanning exposure of the plurality of shot regions so as to assure that a setting distance in which the substrate stage is moved guarantees that a synchronization error between a master stage and the substrate stage falls within an allowable range after the substrate stage is accelerated up to a scan speed for the scanning exposure,

wherein, in the control step, the movement of the substrate stage is controlled such that a setting distance for a first shot region, which is exposed first, upon a change in [a] the row [to which a shot region to be exposed belongs], is set to be longer than a setting distance for other shot regions.

11. (Amended) A scanning exposure method of transferring a pattern of a master onto each of a plurality of shot regions defined on a substrate, while synchronously scanning the master and the substrate, wherein the plurality of shot regions are defined such that a plurality of rows each including plural shot regions are arrayed, and said method [comprising] comprises:

the control step of controlling movement of a substrate stage during exposure of the plurality of shot regions so as to assure that a setting distance in which the substrate stage is moved guarantees that a synchronization error between a master stage and the substrate stage falls within an allowable range after the substrate stage is accelerated up to a scan speed for the scanning exposure,

wherein, in the control step, movement of the substrate stage is controlled in accordance with a setting distance determined for each of the plurality of rows [row to which a plurality of shot regions belongs].